Case 3049

Cnemidophorus neomexicanus Lowe & Zweifel, 1952 (Reptilia, Squamata): proposed conservation of the specific name

Hobart M. Smith[1], Harry L. Taylor[2], James M. Walker[3], Ralph W. Axtell[4], Steven J. Beaupre[3], David Chiszar[5], James E. Cordes[6], Julio A. Lemos-Espinal[7], Andrew H. Price[8], Frank van Breukelen[1] & Richard G. Zweifel[9] (Addresses on p. 171)

Abstract. The purpose of this application is to conserve the specific name of *Cnemidophorus neomexicanus* Lowe & Zweifel, 1952 for a parthenogenetic whiptail lizard (family TEIIDAE) from the southwestern United States. The name has been unambiguously applied to the species and has been in consistent use for the last 30 years. However, it is threatened by *C. perplexus* Baird & Girard, 1852, the application of which has long been ambiguous and contentious.

Keywords. Nomenclature; taxonomy; Reptilia; Squamata; whiptail lizards; TEIIDAE; *Cnemidophorus neomexicanus*; southwestern United States.

---

1. The status of the specific name of *Cnemidophorus perplexus* Baird & Girard, 1852 has long been questioned but has never been explicitly resolved. During its 145-year history the name has been applied to virtually every species of the *C. sexlineatus* (Linnaeus, 1766) group in the southwestern United States (see Wright, 1969). The specimen which since 1931 has been accepted as the lectotype has been variously interpreted since 1967 as unidentifiable, or as a hybrid from a parthenogenetic-bisexual union, or as a parthenogenetic species later described as *Cnemidophorus neomexicanus* Lowe & Zweifel, 1952. During the last 30 years the name *perplexus* has been abandoned and *neomexicanus* has consistently been used. As a group interested in the taxonomy of the genus *Cnemidophorus* in the southwestern United States we propose that *perplexus* be suppressed.

2. In 1852 Baird & Girard (p. 128) briefly described the new species *Cnemidophorus perplexus* on the basis of several specimens (as indicated by citation of a number of localities) in the 'Museum of the Smithsonian Institution', but without citation of their catalog numbers. The three localities were given as 'Valley of the Rio San Pedro of the Rio Grande del Norte. Specimens were also collected by Gen. Churchill, on the Rio Grande west of San Antonia [sic], Texas, and by Dr William Gambel on his last journey to California'. The localities and collectors cited have enabled subsequent workers to determine with reasonable certainty on which specimens Baird & Girard (1852) based the name but, inasmuch as two species are represented among the four supposed syntypes now extant, application of the name has rested upon subsequent designation of a lectotype.

3. Much argument has ensued regarding the earliest acceptable designation of a lectotype for *Cnemidophorus perplexus*. Axtell (1981) cogently argued that Baird (1859, p. 10) regarded USNM 3020 (now lost) as the type because this is the first listed

specimen in the 1859 work and the locality San Pedro is the first (and main one) listed in the original description. Baird & Girard (1853, p. viii) explicitly stated their policy of regarding the type as the first for which measurements were given — evidence of the primacy they attached to the first specimens listed. No such explicit statement exists in either the original (1852) description or Baird's (1859) work, hence neither publication can be accepted as having established a holotype or lectotype for *C. perplexus*, probable intent notwithstanding. *Cnemidophorus inornatus* Baird, 1858 was represented by the two *C. perplexus* syntypes USNM 3050 and USNM 248691 taken by Churchill 'on the Rio Grande west of San Antonia', and by a syntype collected by William Gambel, now USNM 30885, originally catalogued with another specimen (see following para.) under USNM 3060, from an uncertain locality, possibly the same as that of the present USNM 3060. Thus the original syntypes included at least three and probably four (the lost USNM 3020) examples of *C. inornatus*. The name *C. perplexus* was erroneously applied to this species during the first half of the present century, until Schmidt & Smith (1944, pp. 85–87) distinguished the two species. The citation by Maslin, Beidleman & Lowe (1958, p. 343) of the five specimens under USNM 3022 as syntypes of *C. perplexus* is in error; they are syntypes of *C. gularis*, established (p. 128) in the same work as *C. perplexus*, and USNM 3022a is the lectotype (see Cochran, 1961, p. 98).

4. Cope (1893, p. 34) stated that 'the type specimen [of *C. perplexus*] is the largest obtained, and is probably adult' but did not cite a catalog number or other unambiguous identification of the specimen. Burt (1931, p. 122) accepted Cope's criterion of the largest specimen and explicitly cited USNM 3060 as the female lectotype. This designation has subsequently received general acceptance despite the fact that the specimen was among the supplementary ones listed.

5. The taxonomic population represented by USNM 3060 has been even more uncertain, in part because the specimen was obtained by William Gambel at an unknown locality on one of his trips to California. The specimen's probable geographic origin was most carefully reviewed by Maslin et al. (1958), who showed that Burt's (1931) statement of the 'Valley of the Rio Grande del Norte' as type locality of *C. perplexus* was in error (although on such bases Wright & Degenhardt, 1962 subsequently further narrowed Maslin et al.'s restriction to 'San Pedro Creek and Tanque Arroyo between the Rio Grande and Hagan, Sandoval County, New Mexico'). Cope (1900, p. 573) treated *Cnemidophorus perplexus* as a subspecies of *C. tessellatus* Say, 1823; all six editions of the *Check list of North American amphibians and reptiles*, from 1917 to 1953, as well as Smith (1946) and Burger (1950, p. 3), accepted it as a full species; Burt (1931, p. 125) regarded it as representative of a subspecies of *Cnemidophorus sexlineatus*; Lowe & Zweifel (1952, p. 231) followed established custom at that time in regarding it as a junior synonym of *C. inornatus*; Wright & Lowe (1967) concluded that USNM 3060, taken to be the lectotype, was a hybrid between *C. neomexicanus* Lowe & Zweifel, 1952 (parthenogenetic) and *C. inornatus* (bisexual), and Wright (1969) detailed the confusing history of application of the name *C. perplexus*, proposing its suppression (but never applying to the Commission, perhaps in part because the lectotype was thought to be a hybrid); and both Taylor & Walker (1996) and Walker (1997) returned the name to synonymy with *C. neomexicanus*, showing conclusively that USNM 3060 is not a hybrid. Taylor & Walker (1996) also proposed the suppression of *perplexus*.

6. Since 1967 the influence of an analysis by Wright & Lowe (1967) has resulted (with few exceptions; see, for example, Parker, Walker & Paulissen, 1989, who mentioned both taxa) in abandonment of the name *C. perplexus* and consistent use of *C. neomexicanus*. The latter name has become well established in many disciplines and in the popular literature, as demonstrated for example in the most popular field guides to United States herpetology by Stebbins (1954, 1966, 1985), Conant (1975), Behler & King (1979), Smith & Brodie (1982), and Conant & Collins (1991); various articles in the highly technical symposium on unisexual vertebrates (Dawley & Bogart, 1989); the important review of the biology of the genus (Wright & Vitt, 1993); and the guide to the herpetology of New Mexico (Degenhardt, Painter & Price, 1996).

7. In view of the current stability of the name *Cnemidophorus neomexicanus* Lowe & Zweifel, 1952 (p. 230), and the long history of confusion centering upon the name *C. perplexus* Baird & Girard, 1852 (see Taylor & Walker, 1996), we, as most of the concerned living specialists on this group of lizards, here propose that the name *perplexus* be suppressed. Approval of the proposal will bring the uncertainty and controversy over *perplexus* to a close and will assure the continued use of the name *neomexicanus* for this whiptail lizard of the southwestern United States. The nominal taxon is based on the holotype MVZ 55807, collected by Charles H. Lowe, Jr. in August 1947 from Socorro County, New Mexico, and deposited in the Museum of Vertebrate Zoology, University of California at Berkeley. The specimen was figured by Lowe & Zweifel (1952, pl. 1, fig. a). There are also 47 paratype specimens.

8. The International Commission on Zoological Nomenclature is accordingly asked:

(1) to use its plenary powers to suppress the specific name *perplexus* Baird & Girard, 1852, as published in the binomen *Cnemidophorus perplexus*, for the purposes of the Principle of Priority but not for those of the Principle of Homonymy;

(2) to place on the Official List of Specific Names in Zoology the name *neomexicanus* Lowe & Zweifel, 1952, as published in the binomen *Cnemidophorus neomexicanus*;

(3) to place on the Official Index of Rejected and Invalid Names in Zoology the name *perplexus* Baird & Girard, 1852, as published in the binomen *Cnemidophorus perplexus* and as suppressed in (1) above.

References

Axtell, R.W. 1981. *Holbrookia propinqua*: type specimens, collector, his route, and restriction of locality, with comments on Baird's 'Reptiles of the Boundary' as an important taxonomic reference. *Journal of Herpetology*, **15**(2): 211–217.

Axtell, R.W. 1994. *Cnemidophorus inornatus*. *Interpretive Atlas of Texas Lizards*, **14**: 1–17.

Baird, S.F. 1859. *Reptiles of the boundary. United States and Mexican Boundary Survey, under the order of Lieut. Col. W.H. Emory, Major First Cavalry, and United States Commissioner*. 35 pp.

Baird, S.F. & Girard, C. 1852. Characteristics of some new reptiles in the Museum of the Smithsonian Institution. *Proceedings of the Academy of Natural Sciences of Philadelphia*, 6(4): 125–129.

Baird, S.F. & Girard, C. 1853. *Catalogue of North American reptiles in the Museum of the Smithsonian Institution*, part 1 (Serpents). xvi, 172 pp. Smithsonian Institution, Washington.

Behler, J.L. & King, F.W. 1979. *The Audubon Society field guide to North American reptiles and amphibians*. 719 pp. Knopf, New York.

Burger, W.L. 1950. New, revived, and reallocated names for North American whiptailed lizards, genus *Cnemidophorus*. *Natural History Miscellanea*, **65**: 1–9.

Burt, C.E. 1931. A study of the teiid lizards of the genus *Cnemidophorus* with special reference to their phylogenetic relationships. *Bulletin of the United States National Museum*, **154**: 1–286.

Cochran, D.M. 1961. Type specimens of reptiles and amphibians in the United States National Museum. *Bulletin of the United States National Museum*, **220**: 1–291.

Conant, R. 1975. *A field guide to reptiles and amphibians of eastern and central North America*, Ed 2. xviii, 429 pp. Houghton Mifflin, Boston.

Conant, R. & Collins, J.T. 1991. *A field guide to reptiles and amphibians. Eastern and central North America*. xx, 450 pp. Houghton Mifflin, Boston.

Cope, E.D. 1893. A synopsis of the species of the teïd [sic] genus *Cnemidophorus*. *Transactions of the American Philosophical Society*, N.S. **17**(1): 27–52.

Cope, E.D. 1900. The crocodilians, lizards, and snakes of North America. *Annual Report of the United States National Museum*, **1898**: 153–1270.

Dawley, R.M. & Bogart, J.P. (Eds.). 1989. Evolution and ecology of unisexual vertebrates. *New York State Museum Bulletin*, **466**: 1–302.

Degenhardt, W.G., Painter, C.W. & Price, A.H. 1996. *Amphibians and reptiles of New Mexico*. xix, 431 pp. University of New Mexico, Albuquerque.

Lowe, C.H., Jr. & Zweifel, R.G. 1952. A new species of whiptailed lizard (genus *Cnemidophorus*) from New Mexico. *Bulletin of the Chicago Academy of Sciences*, **9**(13): 229–247.

Maslin, T.P., Beidleman, R.G. & Lowe, C.H., Jr. 1958. The status of the lizard *Cnemidophorus perplexus* Baird and Girard (Teiidae). *Proceedings of the United States National Museum*, **108**(3406): 331–345.

Parker, E.D., Jr., Walker, J.M. & Paulissen, M.A. 1989. Clonal diversity in *Cnemidophorus*: ecological and morphological consequences. *New York State Museum Bulletin*, **466**: 72–86.

Schmidt, K.P. & Smith, T.F. 1944. Amphibians and reptiles of the Big Bend region of Texas. *Publications of Field Museum of Natural History*, Zoological Series, **29**(5): 75–96.

Smith, H.M. 1946. *Handbook of lizards. Lizards of the United States and Canada*. xxi, 557 pp. Cornell University, Ithaca, New York.

Smith, H.M. & Brodie, E.D., Jr. 1982. *A guide to field identification. Reptiles of North America*. 240 pp. Golden Press, New York.

Stebbins, R.C. 1954. *Amphibians and reptiles of western North America*. xxiv, 536 pp. McGraw-Hill, New York.

Stebbins, R.C. 1966. *A field guide to western reptiles and amphibians*. xvi, 279 pp. Houghton Mifflin, Boston.

Stebbins, R.C. 1985. *A field guide to western reptiles and amphibians*. xvi, 336 pp. Houghton Mifflin, Boston.

Taylor, H.L. & Walker, J.M. 1996. *Cnemidophorus neomexicanus — Cnemidophorus perplexus* nomenclatural problem (Sauria: Teiidae) and its resolution. *Copeia*, **1996**(4): 945–954.

Walker, J.M. 1997. Genealogy of the lectotype of *Cnemidophorus perplexus* Baird and Girard, 1852. *Journal of Herpetology*, **31**: 103–107.

Wright, J.W. 1969. Status of the name *Cnemidophorus perplexus* Baird and Girard (Teiidae). *Herpetologica*, **25**: 67–69.

Wright, J.W. & Degenhardt, W.G. 1962. The type locality of *Cnemidophorus perplexus*. *Copeia*, **1962**: 210–211.

Wright, J.W. & Lowe, C.H. 1967. Hybridization in nature between parthenogenetic and bisexual species of whiptail lizards (genus *Cnemidophorus*). *American Museum Novitates*, **2286**: 1–36.

Wright, J.W. & Vitt, L.J. (Eds.). 1993. *Biology of whiptail lizards* (*genus* Cnemidophorus). xiv, 417 pp. Oklahoma Museum of Natural History, Norman.

[1]*Department of Environmental, Population and Organismic Biology, University of Colorado, Boulder, Colorado 80309-0334, U.S.A.* [2]*Department of Biology, Regis University, Denver, Colorado 80221, U.S.A.* [3]*Department of Biological Sciences, University of Arkansas, Fayetteville, Arkansas 72703, U.S.A.* [4]*Faculty of Biological Sciences, Southern Illinois University, Edwardsville, Illinois 62025, U.S.A.* [5]*Department of Psychology, University of Colorado, Boulder, Colorado 80309-0345, U.S.A.* [6]*Division of Sciences, Louisiana State University at Eunice, Eunice, Louisiana 70535, U.S.A.* [7]*Laboratorio de Conservación, CyMA, UICSE, Escuela Nacional de Estudios Profesionales Iztacala, UNAM, Apartado Postal 314, Tlalnepantla, Estado de México, Mexico.* [8]*Texas Parks and Wildlife Department, 4200 Smith School Road, Austin, Texas 78744, U.S.A.* [9]*P.O. Box 16354, Portal, Arizona 85632, U.S.A.*